**Solving Two-Step Equations**

A two-step equation is when you have two numbers to cancel out in order to isolate the variables. We still follow the same steps from one-step equations, but there’s one other tricky part that we’ll discuss below.

**Step 1:** Look at the side of the equation that contains the variable. Identify which numbers need to be canceled out so that we can isolate the variable. In two-step equations, we will have two different numbers to cancel out.

For example, in the equation 2x + 7 = 9, when we look at the side of the equation that contains the variable, we have 2x + 7. In order to isolate x, we need to cancel out the 2 and the 7.

**Step 2:** Identify which operations we are doing with the numbers that need to be canceled out.

In our example, we are adding 7 and multiplying by 2.

**Step 3:** Determine what the inverse operation is that you will need to do to cancel out the numbers on the same side of the equation as the variable.

In our example, the cancel out the adding 7, we will need to subtract 7 on both sides of the equation. Also, to cancel out the multiplying by 2, we will need to divide by 2 on both sides of the equation.

**Step 4:** Step 4 is an additional step required when solving equations that are more than 1 step. In this step, we have to decide which operation to do first. Really, it does not matter. However, it is going to be easier to solve the problem if you cancel out the number further from the variable first. If you don’t do this, you run the risk of having a lot of fractions in your equation.

In our example, 2x + 7 = 9, we should first cancel out the 7 and then cancel out the 2. As discussed in Step 3, we need to subtract 7 from both sides. This gives us:

2x + 7 = 9

-7 -7

2x = 2

2 2

x = 1

**Examples:**



**Step 1:** We only need to look at . In order to get b by itself, we need to cancel out the 4 and the 3.

**Step 2:** In this problem, we are dividing by 3 and we are subtracting the 4.

**Step 3:** In order to cancel out the dividing by 3, we have to multiply both sides of the equation by 3. In order to cancel out the subtracting 4, we need to add 4 to both sides.

**Step 4:** We are going to cancel out the 3 first because it is furthest from the b. Then, we will cancel out the 4.

So we get:

 🡪 Multiply by 3 on both sides

b – 4 = 9 🡪 The 3s on the left cancel

+4 +4 🡪 Add 4 on both sides

b = 13 🡪 The 4s on the left cancel



**Step 1:** We only have to look at  for now. To isolate x, we need to get rid of the 2 and the 7.

**Step 2:** We are subtracting 7 and we are dividing by 2.

**Step 3:** To cancel out the 7, we need to add 7 on both sides. To cancel out the 2, we need to multiply by 2 on both sides.

**Step 4:** We should cancel the 7 first since it is furthest from the variable.

So we get:



+7 +7 🡪 add 7 to both sides

2•10 = •2 🡪 multiply both sides by 2

20 = x